



# **HOLSTER OPTIMISATION WHITE PAPER**

*Version 1*

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by The Theory Police



## TABLE OF CONTENTS

Abstract .....	2
Introduction .....	3
Terminology .....	3
Disclaimer.....	3
Legal Stuff.....	4
Software > Hardware .....	4
What is Efficiency? .....	4
Evidence Based Practice .....	5
Real World vs Theory .....	6
The Trifecta .....	6
Ride Height .....	6
Holster Position .....	8
Holster Angle.....	11
Wrist Biomechanics .....	13
Positive vs Negative .....	15
Level 3 holsters.....	19
Belt Angle.....	22
Glossary.....	24

## ABSTRACT

Testing to determine how the placement of a handgun holster determined the following:

1. Of the available options, optimal ride height is achieved using a Low Ride belt attachment.
2. Holster placement on the belt between 60° to 75° (2:00 to 2:30) is most efficient.
3. A negative cant (aka muzzle forward) angle of the holster of -15° is best. In actuality this is -10° when worn on a belt usually tilted forward 5°.

## **INTRODUCTION**

This writeup will be a constant work in progress as more data becomes available and proves/disproves what we currently think we know. One of the paperwork-and-policy type cops I used to work with called such a thing a “living document”, which used to make me gag. But it’s kind of like that.

I recently had opportunity to re-evaluate the way in which I carry a handgun in an overt, retention mechanism equipped holster. For the first time in carrying a gun for a living in two decades, I was free to do so without restraint from organisational policy and institutional inertia.

Florida based company Safariland is currently the only viable, widely available, duty grade holster manufacturer on the market. While some may wish to debate this, for the purposes of what I will discuss below, it is universally referring to Safariland duty holsters. There have been other companies that have come and gone, tried and failed or that are still upcoming but as a general rule, Safariland produces the standard in holsters.

Prior to penning this white paper, the testing methods and results have been haphazardly deposited in the peer reviewed journal of Instagram under the handle [@the theory police](#). Unfortunately, these posts have become hard to sift through and impossible to update and as such, this document was warranted.

## **TERMINOLOGY**

It will be necessary to have a working knowledge of the proprietary terms in use by Safariland for their products and features thereof. I have included a simple glossary, but an internet search may be needed to clarify if you are unsure what is being spoken about.

## **DISCLAIMER**

Unless where stated otherwise, the information that follows is gleaned from data from me alone. I would love to be able to test whole groups of shooters and build a database of open source information to draw from. Unfortunately, I had limitations on time and ammunition and to be perfectly blunt, my motivation to do all this testing was purely selfish in wanting to improve my own shooting performance. It wasn’t until after I was well into the process did I think to begin capturing and sharing the results. The subsequent Negative Cant Plate products were also unplanned until later stages of the testing when it became evident that there was a gap that couldn’t be fixed with existing hardware.

## LEGAL STUFF

The discussion that follows is for educational purposes only. Should you wish to modify how you use your equipment, the responsibility is yours alone.

This information is open source. I will make all data available in excel format on [www.thetheorypolice.com](http://www.thetheorypolice.com) If you wish to reproduce or reference this material, I would only ask that you link it back to this document so the reader has access to the context and totality of the information.

## SOFTWARE > HARDWARE

It has become popular to dismissively suggest that more training, more reps, are the answer to any shortcomings in performance. While it is undeniable that training and correct repetition are of overarching importance, they need not be to the exclusion of *appropriate* equipment tweaks and enhancements. Simply put, do both. Set yourself up for success.

Similarly, getting the latest gear is not a magic pill. One must practice with the gear *pre-operationally* and accept that there is a learning curve to any change you make to your equipment.

## WHAT IS EFFICIENCY?

As it was handgun holster positioning that was being evaluated, it became necessary to develop a metric to measure changes in performance. The natural choice in measuring holster efficiency is the speed at which the handgun can be drawn and effectively employed on target. This was done throughout by use of a PACT time and a set target and range.

Speed is not the ultimate winner of gunfights. Tactics, movement and communication will generally win the day. However, once the point has come that rounds need to be placed on target, accurate, effective hits will win the skirmish every time over rapid misses. One of the handgun fundamentals repeated on square ranges everywhere is that of GRIP. In the data that follows, I am of the opinion (and plan to explore the evidence to support or dismiss this at a later stage), that a superior initial grip can be achieved by optimising your holster placement. This, coupled with the ability to more rapidly present the weapon are factors in increasing lethality.

## EVIDENCE BASED PRACTICE



The practice of medicine has become dominated by the concept of basing critical decision making on some form of empirical (verifiable by observation or experience rather than theory) support. In cop/solider terms, this means there needs to be a reason for doing something other than the fact that it has always been done that way. Ideally, the strongest forms of evidence come from well conducted research including meta-analyses, systemic reviews and randomised control trials.

The police and military worlds are slowly and awkwardly embracing the concept of evidence-based practice and decision making. Unfortunately, with some notable exceptions in the training world, the vast majority of our tactics and equipment employment are based on the weakest forms of evidence: ideas, opinions, anecdotes, etc. The information below is an attempt to base equipment setup on a level of evidence slightly improved from mere ideas, opinions or my anecdotal experience.

Fortunately, to be progressive is currently in vogue in the Law Enforcement world. This in part due to the articulate nature of some of the training circuit's current personalities and their insistence that tactics should have empirical basis. This has led to many being open to change if it makes sense to them, not usually a police officer virtue. However, there remains a sector of the industry that will resist improvement as a result of it going against what they vehemently believe, no matter the evidence backing the change.

To again borrow from the world of medicine, it is usually discouraged to change one's practice based on a singular study or data set, particularly one that is as scientifically imperfect as the pages that follow. Bear that in mind and make your own, informed, decision as to what changes you will make for yourself. Even better, use the following as a template to assess your own ideal setup.

## REAL WORLD VS THEORY

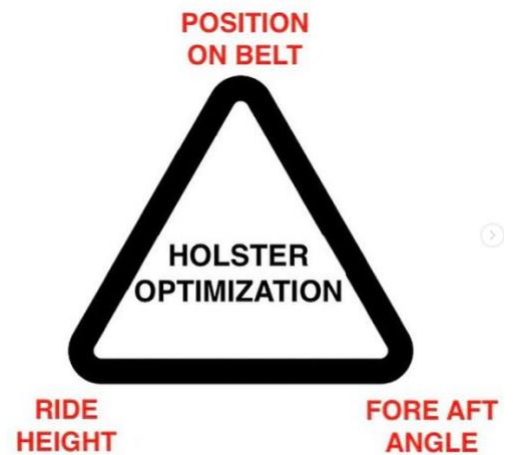
I recognize that what is optimal may not always be practical. Many find a low ride UBL to be uncomfortable when seated and opt for a mid ride. The belt positioning of 60° causes the handgun grip to stick out further and get in the way and the shooter may choose to move it slightly rearward, closer to the 70°. Changing these first two variables slightly reduces the optimal cant of the holster. These specifics results below are one individual's and will change

depending on the shooter. These optimizations are a package deal, you need to tweak each one to get the best results. Wearing a holster on your right hip at -15° on a high ride holster won't help your cause, etc.

I set out to find the ideal, square range, sterile environment setup and then further tweaked each variable for my currently evolving operational environment.

### THE TRIFECTA

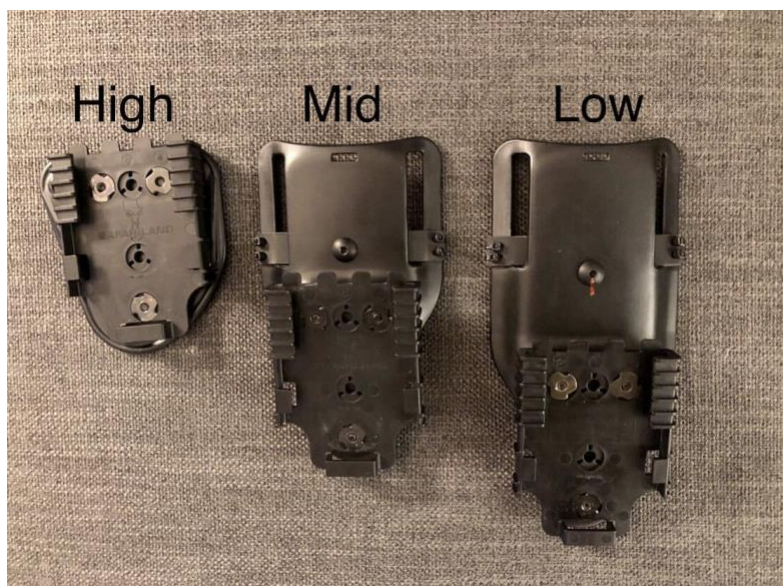
The first step in the process involved brainstorming the variables that could be modified to impact the efficiency of the handgun draw stroke from a holster. Nothing was sacred and off the table for consideration. Ultimately it came down to three main categories: position of the holster on the belt, the height of the belt attachment and the cant (fore and aft) angle.



### RIDE HEIGHT

**Abstract:** In the sample of one shooter, the Safariland 6075 low ride Universal Belt Loop is 6% faster than 6070 mid ride UBL and 15% faster than the 6072 high ride UBL.

**Context:** Safariland holsters can be mounted with a variety of Universal Belt Loops. The high ride UBL places the backplate of the Glock 62mm (2.5") above the top of the belt. The mid ride places the backplate approximately even with the top of the belt. The low ride places the backplate 35mm (1.5") below the top of the belt.





Equipment: Glock 34 with RMR in Safariland 6390RDS (ALS only). Holster attached to alternating height UBLs using QLS fork and plates.

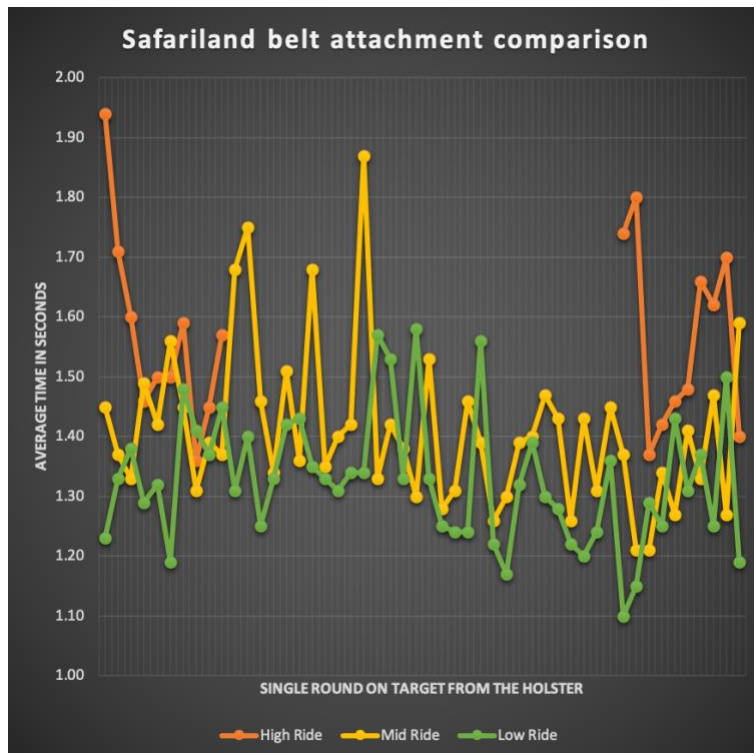
Method: Ten timed sets of ten single shots on target from the holster, alternating between mid and low ride. Approximately 5 metres (16') at 7.5cm (3") discs. I began and finished with sets using the High Ride UBL. I chose not to complete more than the two sets with the high ride setup. Admittedly not very bias free but I had to consider the limitation on time and ammunition in conjunction with the low likelihood of the high ride setup being a viable contender.

Result: The high ride UBL averaged 1.57 seconds. The mid ride UBL averaged 1.41 seconds. The low ride UBL averaged 1.33 seconds. The results for the high ride UBL were predictably slower but not as significant a spread as I had expected.

Mitigating factors: I wore an SLS holster with a mid ride UBL for approximately four years. I then suffered through a period of marginal but mandatory holsters before being able to again carry an SLS/ALS, this time on a low ride UBL, for the past six years. Hence my data points are undoubtedly skewed by an abundance of recent practice with the low ride UBL.

Safariland UBL comparison														
	Control 1	High 1	Mid 1	Low 1	Mid 2	Low 2	Mid 3	Low 3	Mid 4	Low 4	Mid 5	Low 5	High 2	Control 2
1	1.34	1.94	1.45	1.23	1.68	1.31	1.87	1.34	1.26	1.22	1.37	1.10	1.74	1.32
2	1.51	1.71	1.37	1.33	1.75	1.40	1.33	1.57	1.30	1.17	1.21	1.15	1.80	1.43
3	1.41	1.60	1.33	1.38	1.46	1.25	1.42	1.53	1.39	1.32	1.21	1.29	1.37	1.28
4	1.43	1.46	1.49	1.29	1.34	1.33	1.38	1.33	1.40	1.39	1.34	1.25	1.42	1.55
5	1.51	1.50	1.42	1.32	1.51	1.42	1.30	1.58	1.47	1.30	1.27	1.43	1.46	1.25
6	1.27	1.50	1.56	1.19	1.36	1.43	1.53	1.33	1.43	1.28	1.41	1.31	1.48	1.11
7	1.34	1.59	1.45	1.48	1.68	1.35	1.28	1.25	1.26	1.22	1.33	1.37	1.66	1.24
8	1.44	1.36	1.31	1.41	1.35	1.33	1.31	1.24	1.43	1.20	1.47	1.25	1.62	1.29
9	1.37	1.45	1.39	1.37	1.40	1.31	1.46	1.24	1.31	1.24	1.27	1.50	1.70	1.24
10	1.52	1.57	1.37	1.45	1.42	1.34	1.39	1.56	1.45	1.36	1.59	1.19	1.40	1.26
Avg	1.41	1.57	1.41	1.35	1.50	1.35	1.43	1.40	1.37	1.27	1.35	1.28	1.57	1.30





## HOLSTER POSITION

**ABSTRACT:** The most efficient holster location (for me) is 60°, aka 2 o'clock, when both standing (13%) and seated in a vehicle (14%). This positioning affords a >0.20 second advantage over the conventional 90° (3 o'clock) position.

**EQUIPMENT:** Glock 34 with Trijicon RMR in Safariland model 6395RDS holster on low ride UBL.

**BACKGROUND:** Conventional military and police doctrine has seen the handgun holster placed at the 3 o'clock position (for a right handed shooter).

A local police training facility has long advocated recruits place the front of their handgun holster in line with the seam of the pants (approximately 90° position). I am unsure of the origin of this, but it was appropriate for the old, front break Safariland 295 holster. Once these recruits graduate and build up their waists along with their seniority, their belts expand and a lack of equipment verification often leads to the handgun creeping toward a perplexing position behind the hip.

For some time, progressive instructors have advocated bringing the holster slightly forward of the hip (variations range from an inch to above the ergonomically placed trouser pocket) in



order to optimise the movement. Similar to some of the stuff I have looked at elsewhere in this paper, this is common practice in the competition world.

METHOD: I started at the 12 o'clock (0°) position and moved back in 10° increments until the draw became unrealistic (approximately the 4 o'clock or 120° position). The "oval" circumference of the human waist should technically not be referenced using degrees or the common clock face method without an associated distance from a fixed point. An rudimentary method of determining placement is that on a 36" waist, each inch represents 10°.



I tested each position seated in a Ford Explorer (Police Interceptor) for safety and comfort. If the position was impossible or unsafe, I designated it RED (see attached data table). If it were uncomfortable or borderline, I designated it YELLOW. The 60° to 90° range was safe and practical, and I designated it GREEN, added additional 5° increments into the testing.

I conducted six sets of five rounds from each position being tested. Exercise was on a timer to draw and place one round in a 3" circle at 7 metres (22'). All RED locations were removed after the first set. All YELLOW locations were removed after the second set. Sets 1 to 4 were conducted standing. Sets 5 and 6 were conducted seated in a vehicle seat engaging a target to the front (no windshield) using the same criteria as above.

Position	0°	10°	20°	30°	40°	50°	60°	65°	70°	75°	80°	85°	90°	100°	110°	120°
Clockface	12:00	12:20	12:40	1:00	1:20	1:40	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:20	3:40	4:00
Seated																
1	2.16	1.81	1.84	1.51	1.67	1.64	1.49	1.80	1.66	1.59	1.66	1.76	1.70	2.07	2.01	1.89
2	1.81	2.13	1.84	1.98	1.61	1.96	1.56	1.56	1.54	1.67	1.51	1.60	1.80	1.71	1.93	1.92
3	1.97	1.90	1.63	1.88	1.64	1.44	1.65	1.84	1.43	1.80	1.57	1.84	1.78	1.81	2.10	2.03
4	1.77	1.71	1.70	1.55	1.69	1.46	1.52	1.80	1.69	1.65	1.72	1.80	1.90	1.65	1.78	1.86
5	1.87	1.61	1.58	1.78	1.84	1.61	1.56	1.76	1.63	1.50	1.73	2.06	1.84	1.74	1.72	2.27
6	2.21	1.67			1.64	1.65	1.64	1.43	1.47	1.88	1.66	2.38	1.74	1.99		
7	1.95	1.74			1.65	1.60	1.44	1.74	1.57	1.74	1.78	1.91	1.79	2.12		
8	2.26	1.89			1.52	1.62	1.58	1.76	1.63	1.61	1.76	1.67	1.68	2.87		
9	1.74	1.58			1.46	1.61	1.60	1.65	1.75	1.80	1.56	2.11	1.65	2.05		
10	1.81	1.52			1.71	1.53	1.58	1.33	1.58	1.82	1.74	1.79	1.95	1.71		
11							1.54	1.55	1.66	1.44	1.93	1.90	2.22			
12							1.57	1.55	1.74	1.70	2.21	2.40	1.91			
13							1.57	1.63	1.80	1.62	1.95	1.63	1.77			
14							1.44	1.65	1.80	1.72	2.01	2.48	1.75			
15							1.58	1.42	1.81	1.56	1.95	2.35	1.76			
16							1.72	1.28	1.52	1.29	1.57	1.69	1.71			
17							1.47	1.38	1.50	1.53	1.58	1.65	1.59			
18							1.42	1.39	1.49	1.57	1.68	1.72	1.74			
19							1.49	1.32	1.66	1.62	1.66	1.78	1.66			
20							1.44	1.26	1.49	1.55	1.64	2.11	1.61			
Avg	1.96	1.76	1.72	1.74	1.64	1.61	1.54	1.56	1.62	1.63	1.74	1.93	1.78	1.97	1.91	1.99

	Seated in vehicle sets						
Position	60°	65°	70°	75°	80°	85°	90°
Clockface	2:00	2:10	2:20	2:30	2:40	2:50	3:00
1	1.93	2.09	1.86	2.05	1.84	2.14	2.21
2	1.88	1.89	2.22	2.16	2.04	2.73	1.94
3	1.97	1.89	2.25	2.07	2.32	2.20	2.04
4	1.86	1.98	2.36	1.98	1.97	2.02	2.17
5	1.87	2.08	2.04	2.21	2.27	2.08	1.82
6	1.87	1.59	2.01	1.92	2.08	2.33	2.32
7	1.58	1.96	1.92	1.85	1.95	2.45	1.99
8	1.37	1.64	1.90	1.95	2.22	2.40	2.19
9	1.76	1.57	2.16	2.27	2.03	2.33	1.90
10	1.70	1.78	1.98	2.11	2.05	2.35	2.22
Avg	1.78	1.85	2.07	2.06	2.08	2.30	2.08

RESULT: Wearing the holster at the 60° position is approximately 14% more efficient in both the standing and vehicle seated positions over the legacy 90° position. I expected to be able to identify a range of positions that were most appropriate but was surprised to see that the best results were within a small range (remember that 1" is about 10°).

## HOLSTER ANGLE

The final variable proved to be the most intensive and controversial to evaluate. Like many Safariland holster users I have, for years, been frustrated by the forward cant (aka muzzle back, aka positive cant) of the duty holsters. Also known as the “FBI cant”, justification for its existence is varied and unverified. Some of the examples in circulation are:

- It allows the firearm to be more easily concealed under a cover garment.
- It is more comfortable to wear the firearm when seated. e.g. in an office chair or vehicle.
- It prevents the wearer being injured if an accidental discharge were to occur.
- Drawing from a forward canted holster prevents the safety of a 1911 being inadvertently disengaged.

For many this angle translated into subjective inefficiency when accessing the firearm from the holster. Many sought to remove it and return the handgun to a “neutral” position, often using a Dremel to convert the mounting holes to a slot shape. At SHOT show 2020, Safariland released a production version of this slot design, purportedly allowing a total of 10° (5° more and 5° less) adjustment.

With the legacy Safariland 6280 holsters (SLS only), as well as more recent 6360s (SLS and ALS), the cant count be nearly entirely removed by incorporating a QLS plate and fork. The mounting slots allowed a range of adjustment of approximately 8° as follows:

MODEL	STANDARD UBL	QLS RANGE
6360	6°	2° to 10°
7360	7°	3° to 11°
7377	10°	6° to 14°
6390RDS*	9°	5° to 13°

\*The “final straw” for end users came when the second generation of Red Dot Sight holsters were released with *even more* cant than their predecessors. The state of the industry at the time (and currently) was that the progressive type armed individuals who were dedicated to enhance their skills, were both the type likely to early adopt duty worthy RDS equipped handguns *and* take issue with the lack of holster ergonomics.

The advent of this even more aggressive forward angle spurred the same progressive shooters to begin seeking a solution. The earlier “fix” of adding a QLS and reducing the package to 2°, no longer worked and a more robust answer was needed.

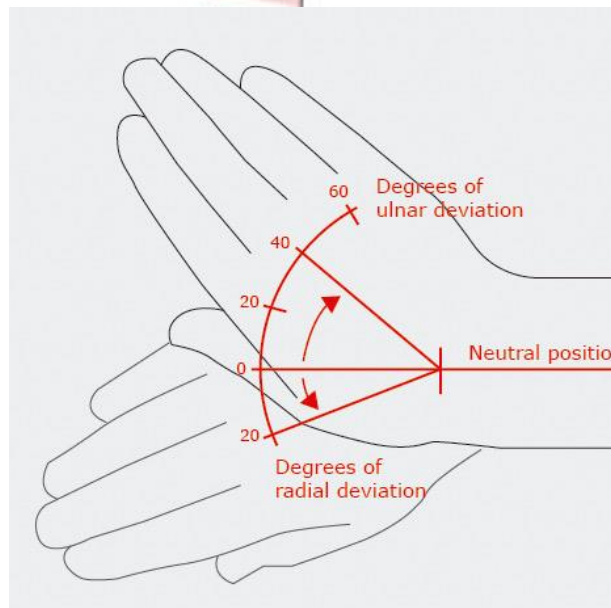
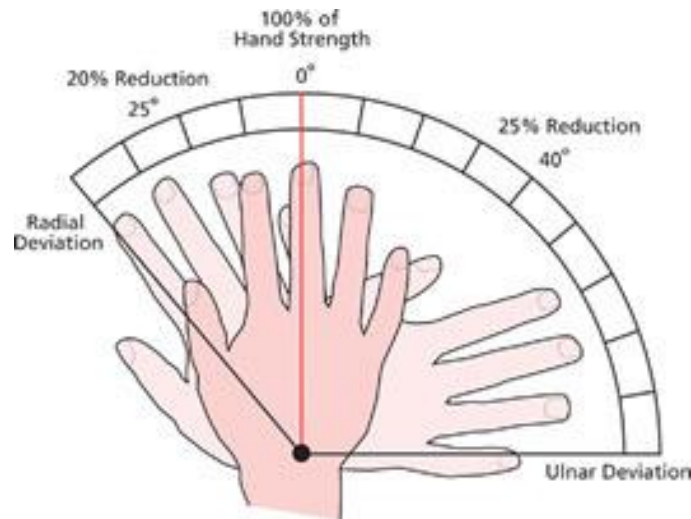




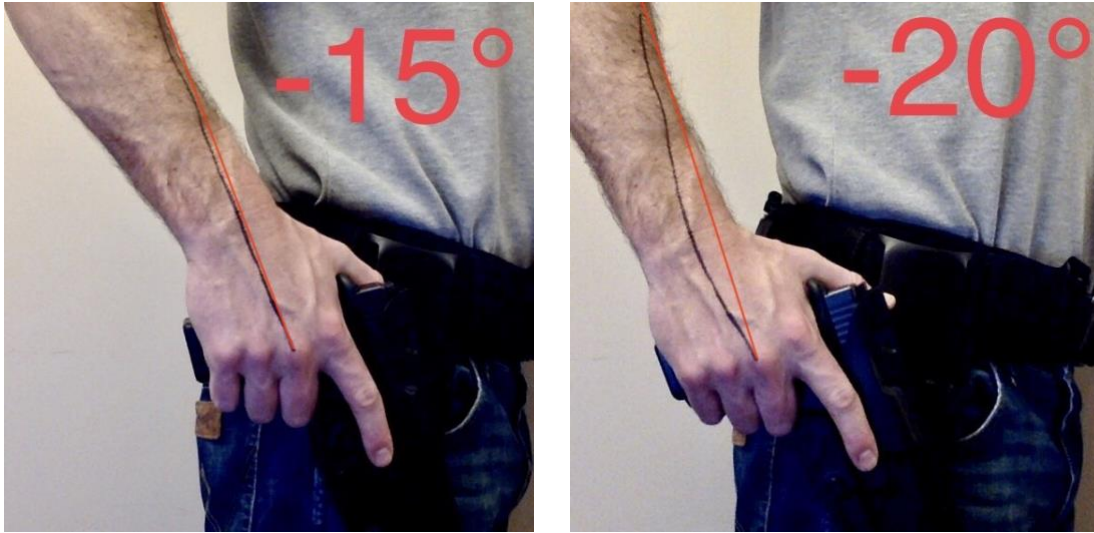
## WRIST BIOMECHANICS

I erroneously believed that a 0° cant (aka straight drop) was the optimal “neutral” position due to the fact that it placed the barrel of the firearm straight down in relation to... gravity?

As you read this document, be it on a mobile device, computer or printed hard copy, pay attention to the angle of your wrist. It is very likely in straight, neutral alignment. Subjectively, deviating the wrist greatly is uncomfortable and unnatural.







Indexing and accessing a handgun pointed in a  $0^\circ$  holster still requires significant deviation. The above is a basic demonstration of wrist angle in relation to holster cant. A rudimentary understanding of biomechanics leads me to believe that one's wrist is most efficient in a neutral position. Subjectively I found my most efficient handgun draws to be when this is the case. To some extent this will differ between individuals however I expect that a safe generalisation is that a holster angle **less than**  $0^\circ$  will be universally more efficient.

Operational environment may place limitations on what cant one can run. e.g. I find  $-15^\circ$  to be the maximum negative cant I can effectively draw from when seated in a vehicle. Concealed carry OWB is more easily achieved with a forward/positive cant, etc.

### POSITIVE VERSUS NEGATIVE

To begin to evaluate the above hypothesis, I conducted an initial test of switching back and forth between a positive and negative angle.

Abstract: A  $13^\circ$  rearward cant on an ALS holster is approximately a tenth of a second (9%) faster, and more efficient, than the  $6^\circ$  forward cant.

I postulated that a negative (rearward) cant would optimise the draw stroke. This isn't a new concept; competition shooters have done this for a while. I timed 200 repetitions from the holster alternating between  $6^\circ$  (forward) and  $-13^\circ$  (rearward) cants in strings of 10 reps each. I fired one round from the holster on a A zoneish target at seven metres (23 feet) and recorded the times.

100 reps at  $6^\circ$  averaged 1.20 seconds. 100 reps at  $-13^\circ$  averaged 1.09 seconds.



Conclusion: A negative (rearward) cant of  $-13^{\circ}$  on an ALS only Safariland holster is 0.11 seconds faster than a  $6^{\circ}$  positive (forward) cant and faster still than the stock  $9^{\circ}$  cant.

	6°	-13°	6°	-13°	6°	-13°	6°	-13°	6°	-13°	6°	-13°	6°	-13°	6°	-13°	6°	-13°	6°	-13°
1	1.60	1.21	1.31	1.02	1.15	1.19	1.42	1.21	1.15	1.05	1.36	1.11	1.20	1.11	1.25	1.17	1.23	1.09	1.20	0.95
2	1.28	1.18	1.36	1.06	1.16	1.26	1.35	1.32	1.44	1.04	1.16	0.97	1.22	1.25	1.18	1.28	1.27	0.98	1.16	0.92
3	1.34	1.29	1.29	1.11	1.20	1.08	1.28	1.04	1.44	0.85	1.16	1.07	1.24	1.25	1.14	1.13	1.13	0.92	1.02	1.00
4	1.38	1.28	1.26	1.08	1.30	1.20	1.07	0.99	1.09	0.94	1.25	0.97	1.27	1.26	0.98	1.17	1.04	0.95	1.14	1.08
5	1.16	1.20	1.21	1.07	1.04	1.13	1.17	1.08	1.23	0.96	1.13	1.06	1.25	1.19	0.99	1.24	1.34	1.01	1.07	1.03
6	1.23	1.18	1.24	1.05	1.17	1.23	1.16	1.15	1.10	1.34	1.26	1.32	1.33	1.30	1.30	1.01	1.27	1.09	1.10	0.92
7	1.28	1.13	1.24	1.12	1.18	1.06	1.17	1.12	1.00	0.97	1.24	1.18	1.38	1.06	1.06	1.25	1.21	1.04	1.04	0.92
8	1.22	1.27	1.28	0.98	1.34	1.04	1.18	0.94	0.99	1.16	1.03	1.00	1.30	1.15	1.14	1.12	1.26	0.98	1.02	1.07
9	1.26	1.12	1.14	1.07	1.26	1.32	1.17	0.90	1.07	0.88	1.12	1.14	1.17	1.03	1.22	1.32	1.35	0.83	1.16	1.01
10	1.20	1.22	1.32	1.04	1.27	1.21	1.07	1.15	1.15	1.23	1.26	0.88	1.32	0.96	1.19	1.32	1.27	0.98	1.07	0.91
Avg	1.31	1.20	1.26	1.06	1.19	1.17	1.20	1.09	1.16	1.04	1.19	1.07	1.26	1.15	1.14	1.20	1.23	1.00	1.12	0.96

To facilitate further testing, a device allowing holster cant to be changed quickly can be easily duplicated with common materials.



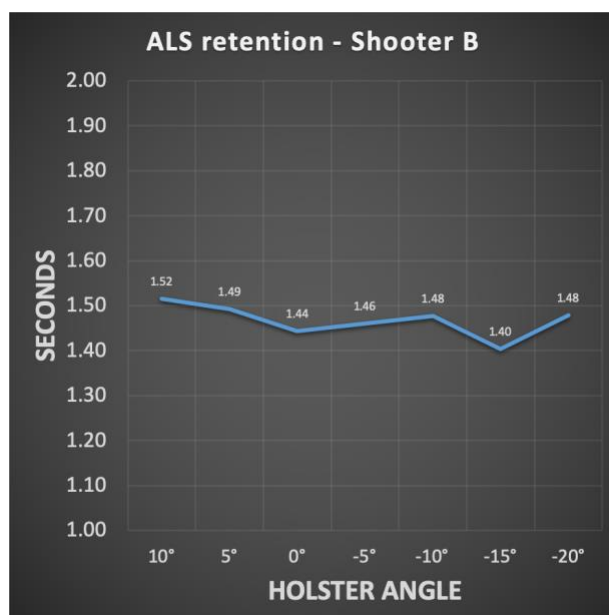
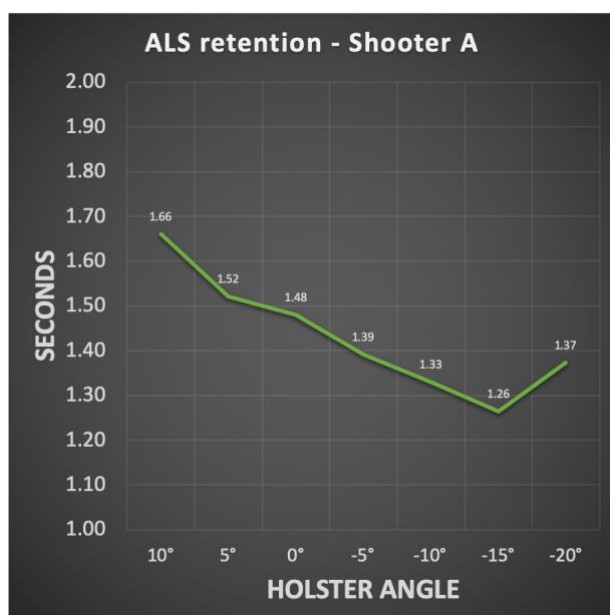
I sought to expand this testing to narrow down what the optimal angle would prove to be. As with my previous testing, I initially conducted the testing alone giving a sample of just one. However, there was such significance in my results that I felt uncomfortable sharing them without further verification. I conducted the same exercise with two more shooters who were

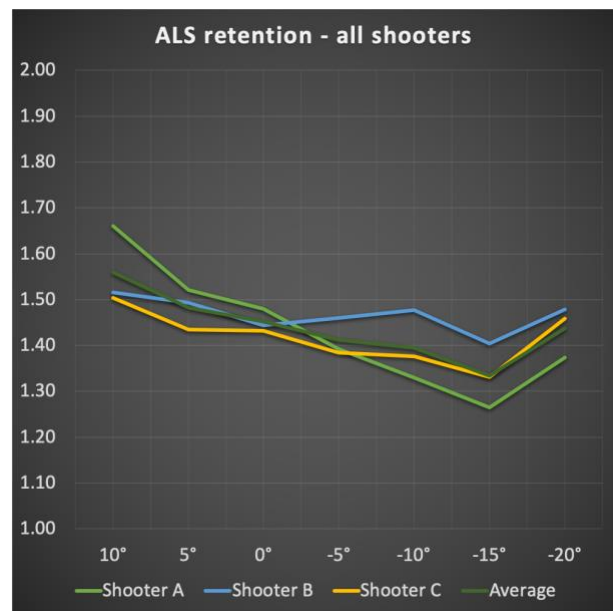
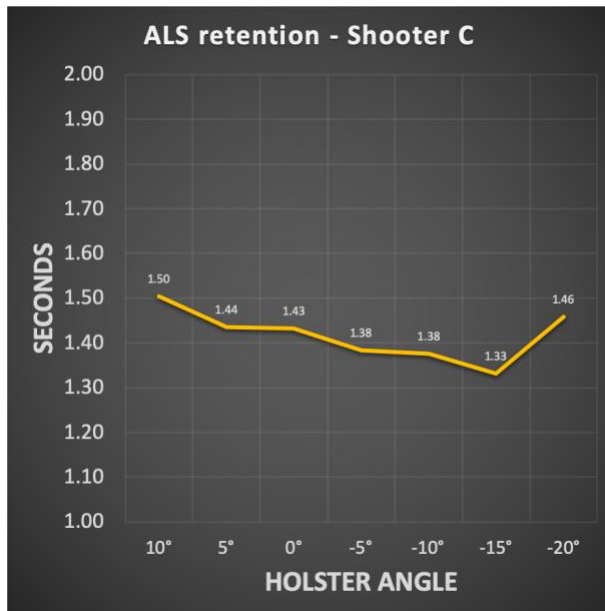
blinded to the angle they were shooting (i.e. the numbers covered in masking tape and the adjustments made by tester). This resulted in approximately 800 rounds being fired for this testing. Consistent among three shooters, a negative cant of  $-15^{\circ}$  was optimal (0.23s faster than  $10^{\circ}$ ) for Safariland holsters equipped with only the Automatic Locking System retention.

We used a Safariland 7365 with the SLS mechanism completely removed, leaving only the ALS retention. The holster was attached using a low ride UBL with the adaptor allowing adjustment of the holster angle between  $10^{\circ}$  (the factory standard),  $5^{\circ}$ ,  $0^{\circ}$ ,  $-5^{\circ}$ ,  $-10^{\circ}$ ,  $-15^{\circ}$  and  $-20^{\circ}$ . The shooter was to draw and fire a single round at an 8cm (3") dot at 5 metres (16 feet). The angle was adjusted randomly using the roll of a dice every 10 rounds. This was continued until 30 rounds had been fired at each angle. Misses were discounted. Total of 210 hits recorded using a timer.

The trends for all three shooters were fairly consistent. The most inefficient angle was the  $10^{\circ}$  positive cant that comes standard with the RDS holsters (non RDS is closer to  $5^{\circ}$ ). Speed increased as the angle decreased, optimizing at the  $-15^{\circ}$  mark. There was a sharp decrease in speed at the  $-20^{\circ}$ . Subjectively this angle felt awkward. Prior testing shows  $-15^{\circ}$  to be the maximum that can be used seated in a vehicle. A cant of  $0^{\circ}$  showed a 0.11s improvement over factory standard.

Shooters A and C were familiar with using ALS only holsters. Shooter B was new to ALS only but familiar with SLS/ALS combinations. Shooter A, having been experimenting with a  $-10^{\circ}$  to  $-15^{\circ}$  holster cant for some months, showed a massive 0.40s speed gain at  $-15^{\circ}$ . All shooters wore the holster between  $60^{\circ}$  and  $75^{\circ}$  (2:00 and 2:30) on the belt. Shooters A and C used a Glock 35 with fibre optic sights. Shooter B used a Trijicon SRO 2.5 MOA which was brand new to him. All three shooters experienced the greatest number of "fumbles" on the draw at the  $10^{\circ}$  and  $-20^{\circ}$  marks (anecdotal, not measured).





SHOOTER A							
	10°	5°	0°	-5°	-10°	-15°	-20°
1	1.77	1.53	1.53	1.41	1.40	1.29	1.69
2	1.95	1.76	1.53	1.37	1.53	1.42	1.40
3	1.95	1.65	1.47	1.23	1.61	1.48	1.56
4	1.65	1.66	1.50	1.38	1.65	1.46	1.32
5	1.77	1.80	1.37	1.39	1.53	1.39	1.48
6	1.78	1.50	1.33	1.66	1.51	1.41	1.29
7	1.92	1.46	1.76	1.56	1.38	1.32	1.38
8	1.70	1.40	1.70	1.49	1.53	1.47	1.32
9	1.65	1.50	1.47	1.48	1.43	1.33	1.31
10	1.77	1.51	1.38	1.43	1.70	1.51	1.30
11	1.66	1.30	1.29	1.36	1.16	1.15	1.22
12	1.57	1.52	1.46	1.33	1.16	1.27	1.34
13	1.60	1.56	1.32	1.42	1.19	1.07	1.34
14	1.50	1.52	1.33	1.27	1.03	1.16	1.52
15	1.43	1.49	1.56	1.31	1.14	1.19	1.29
16	1.50	1.34	1.54	1.60	1.06	1.34	1.44
17	1.47	1.44	1.23	1.31	1.18	1.10	1.23
18	1.46	1.39	1.42	1.25	1.20	1.33	1.34
19	1.46	1.42	1.50	1.33	1.25	1.24	1.37
20	1.53	1.49	1.42	1.42	1.35	1.08	1.40
21	1.79	1.45	1.35	1.43	1.40	1.22	1.12
22	1.87	1.57	1.45	1.25	1.22	1.30	1.18
23	1.72	1.42	1.43	1.44	1.18	1.20	1.31
24	1.63	1.59	1.52	1.30	1.16	1.05	1.36
25	1.53	1.65	1.94	1.31	1.29	1.13	1.52
26	1.62	1.51	1.48	1.70	1.15	1.12	1.49
27	1.62	1.60	1.73	1.34	1.40	1.12	1.51
28	1.67	1.63	1.36	1.26	1.35	1.25	1.43
29	1.60	1.67	1.48	1.33	1.36	1.27	1.40
30	1.66	1.30	1.54	1.39	1.41	1.26	1.33
	1.66	1.52	1.48	1.39	1.33	1.26	1.37

SHOOTER B							
	10°	5°	0°	-5°	-10°	-15°	-20°
1	1.96	1.67	1.42	1.65	1.54	1.50	1.80
2	1.98	1.44	1.33	1.50	1.52	1.40	1.43
3	1.63	1.47	1.32	1.43	1.37	1.21	1.65
4	1.58	1.46	1.52	1.44	1.38	1.41	1.45
5	1.43	1.70	1.55	1.43	1.35	1.35	1.42
6	1.44	1.45	1.46	1.58	1.59	1.44	1.40
7	1.35	1.51	1.41	1.39	1.28	1.52	1.49
8	1.41	1.50	1.40	1.30	1.46	1.49	1.51
9	1.36	1.35	1.50	1.32	1.55	1.48	1.35
10	1.31	1.41	1.43	1.46	1.50	1.50	1.43
11	1.83	1.50	1.36	1.42	1.34	1.52	1.46
12	1.44	1.45	1.55	1.51	1.34	1.28	1.52
13	1.61	1.55	1.48	1.48	1.37	1.37	1.44
14	1.53	1.45	1.30	1.53	1.38	1.37	1.33
15	1.50	1.53	1.31	1.52	1.43	1.29	1.53
16	1.50	1.52	1.35	1.45	1.33	1.45	1.47
17	1.42	1.58	1.34	1.43	1.32	1.41	1.33
18	1.60	1.47	1.33	1.30	1.29	1.27	1.45
19	1.41	1.56	1.54	1.38	1.33	1.29	1.43
20	1.50	1.49	1.36	1.51	1.34	1.28	1.33
21	1.54	1.67	1.53	1.51	1.79	1.54	1.48
22	1.58	1.49	1.49	1.49	1.68	1.35	1.43
23	1.48	1.40	1.31	1.51	1.53	1.49	1.42
24	1.37	1.42	1.47	1.42	1.66	1.31	1.41
25	1.51	1.59	1.89	1.52	1.66	1.54	1.50
26	1.37	1.37	1.41	1.57	1.67	1.39	1.63
27	1.38	1.33	1.48	1.44	1.66	1.30	1.49
28	1.32	1.48	1.53	1.40	1.55	1.35	1.59
29	1.68	1.54	1.51	1.53	1.55	1.54	1.58
30	1.44	1.43	1.44	1.39	1.56	1.48	1.61
	1.52	1.49	1.44	1.46	1.48	1.40	1.48

SHOOTER C							
	10°	5°	0°	-5°	-10°	-15°	-20°
1	1.89	1.33	1.83	1.36	1.33	1.33	1.63
2	1.50	1.46	1.37	1.36	1.30	1.42	1.44
3	1.44	1.41	1.71	1.33	1.47	1.29	1.54
4	1.54	1.45	1.31	1.35	1.37	1.32	1.43
5	1.64	1.49	1.49	1.41	1.37	1.24	1.39
6	1.52	1.47	1.48	1.44	1.30	1.31	1.51
7	1.37	1.49	1.46	1.42	1.38	1.22	1.34
8	1.47	1.45	1.52	1.27	1.31	1.33	1.38
9	1.44	1.53	1.40	1.35	1.33	1.38	1.38
10	1.28	1.40	1.31	1.48	1.42	1.33	1.38
11	1.65	1.59	1.43	1.50	1.54	1.42	1.50
12	1.66	1.49	1.49	1.38	1.34	1.36	1.44
13	1.55	1.43	1.35	1.27	1.37	1.42	1.49
14	1.60	1.54	1.36	1.33	1.40	1.28	1.55
15	1.67	1.70	1.36	1.30	1.37	1.42	1.39
16	1.62	1.39	1.56	1.32	1.41	1.28	1.34
17	1.65	1.32	1.32	1.31	1.45	1.29	1.55
18	1.65	1.49	1.39	1.27	1.42	1.30	1.47
19	1.49	1.47	1.38	1.35	1.32	1.43	1.60
20	1.58	1.45	1.45	1.45	1.34	1.44	1.63
21	1.38	1.50	1.49	1.49	1.45	1.46	1.57
22	1.38	1.42	1.37	1.49	1.43	1.37	1.41
23	1.42	1.34	1.37	1.44	1.35	1.24	1.38
24	1.48	1.36	1.27	1.44	1.35	1.41	1.31
25	1.39	1.39	1.39	1.39	1.31	1.35	1.36
26	1.43	1.37	1.39	1.43	1.42	1.25	1.39
27	1.41	1.45	1.48	1.36	1.40	1.23	1.47
28	1.30	1.26	1.41	1.37	1.38	1.27	1.42
29	1.37	1.32	1.47	1.45	1.35	1.22	1.51
30	1.36	1.29	1.35	1.42	1.32	1.34	1.55
	1.50	1.44	1.43	1.38	1.38	1.33	1.46

### LEVEL 3 HOLSTERS

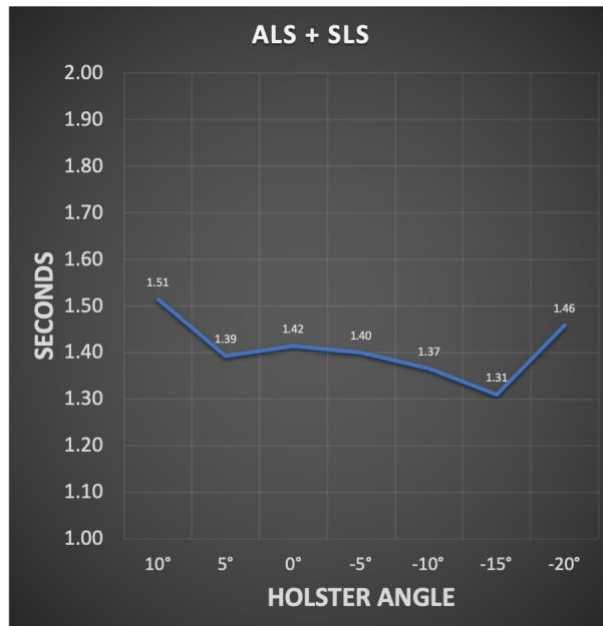
Regressing back into single shooter testing, the same was conducted for holsters equipped with both SLS and ALS retention mechanisms. For me, the negative cant of -15° again proved to be the most efficient. This angle was 0.2s faster than the standard forward cant of 10°.

I was not expecting the SLS/ALS combo to trend the same results as ALS alone. I had worn an SLS/ALS holster for several years at the “nearly 0°” facilitated by a QLS plate and incorrectly presumed that thousands of repetitions and a couple of dozen external classes would manifest themselves in the numbers.

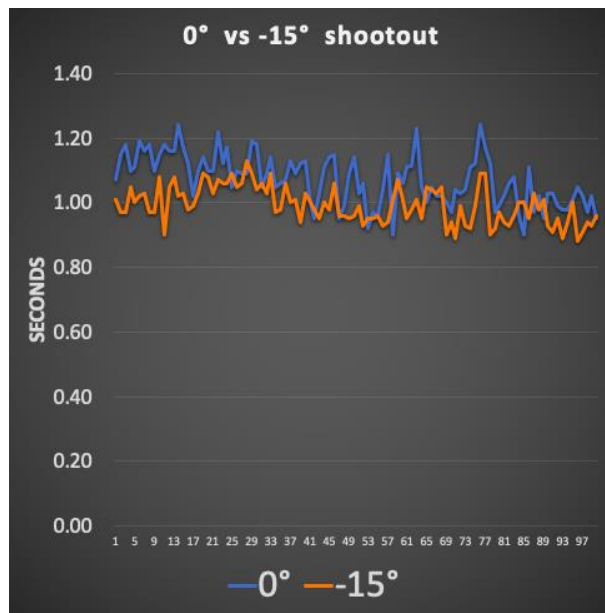
Handgun was a Glock 35 with fibre optic sights. Holster used was a Safariland 7365 with both SLS and ALS retention mechanisms. The holster was attached using a low ride UBL with an adaptor allowing adjustment of the holster angle between 10° (the factory standard), 5°, 0°, -5°, -10°, -15° and -20°. The shooter was to draw and fire a single round at an 8cm (3”) dot at 5 metres (16 feet). The angle was adjusted randomly using the roll of a dice every 10 rounds. This was continued until 30 rounds had been fired at each angle. Misses were discounted. Total of 210 hits recorded using a timer.

	10°	5°	0°	-5°	-10°	-15°	-20°
1	1.65	1.63	1.26	1.37	1.42	1.56	1.66
2	1.64	1.41	1.29	1.63	1.64	1.32	1.72
3	1.59	1.49	1.41	1.41	1.24	1.29	1.67
4	1.63	1.55	1.58	1.43	1.52	1.54	1.59
5	1.47	1.60	1.81	1.43	1.38	1.48	1.48
6	1.47	1.37	1.37	1.45	1.48	1.14	1.77
7	1.42	1.32	1.68	1.31	1.62	1.19	1.79
8	1.66	1.62	1.54	1.65	1.31	1.40	1.77
9	1.48	1.29	1.54	1.53	1.40	1.22	1.58
10	1.50	1.49	1.42	1.49	1.39	1.18	1.52
11	1.52	1.38	1.50	1.55	1.22	1.45	1.59
12	1.45	1.49	1.56	1.50	1.40	1.56	1.43
13	1.56	1.38	1.34	1.47	1.30	1.42	1.44
14	1.55	1.61	1.41	1.52	1.33	1.18	1.51
15	1.38	1.31	1.29	1.41	1.41	1.55	1.63
16	1.59	1.60	1.60	1.46	1.23	1.44	1.44
17	1.80	1.50	1.41	1.43	1.17	1.47	1.37
18	1.48	1.45	1.42	1.45	1.29	1.57	1.60
19	1.71	1.42	1.59	1.65	1.23	1.41	1.34
20	1.66	1.53	1.32	1.34	1.49	1.50	1.59
21	1.40	1.17	1.35	1.41	1.39	1.04	1.43
22	1.41	1.28	1.34	1.20	1.23	1.14	1.13
23	1.42	1.38	1.21	1.12	1.34	1.13	1.38
24	1.41	1.12	1.34	1.26	1.41	1.11	1.13
25	1.47	1.31	1.41	1.29	1.20	1.16	1.14
26	1.52	1.30	1.40	1.39	1.16	1.35	1.22
27	1.29	1.26	1.31	1.19	1.31	1.09	1.17
28	1.64	1.22	1.24	1.27	1.54	1.13	1.16
29	1.44	1.25	1.31	1.26	1.50	1.11	1.31
30	1.22	1.07	1.20	1.15	1.43	1.15	1.22
	1.51	1.39	1.42	1.40	1.37	1.31	1.46





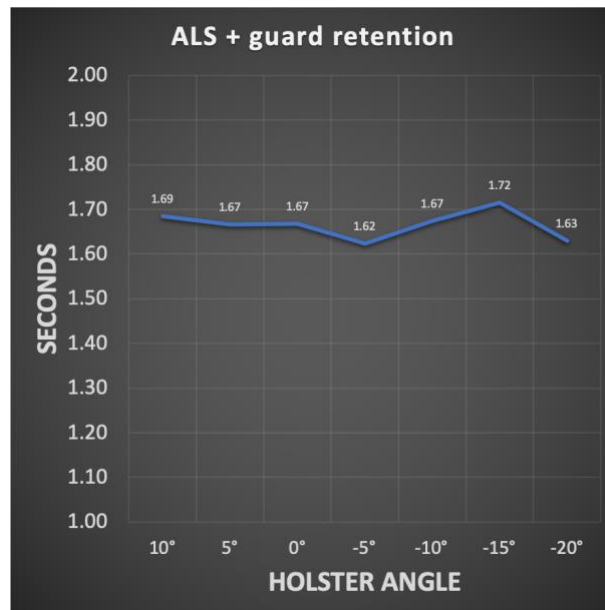
As an added evaluation, 200 rounds were used to further ensure there was the shown difference between 0° and -15°. I alternated ten rounds at each angle until all ammunition was expended at an FBI bulls eye at 5 metres. The average difference between the two remained at 0.1s (0° - 1.09s and -15° - 0.99s).



This block of testing was concluded with the 6006 ALS guard. It has been around for a number of years. I wanted to determine if it may be a viable alternative to the classic Self Locking System (SLS) bale that predates the ALS. Some shooters, especially with smaller hands, seem to

struggle with defeating the SLS consistently.

My personal results were very inconsistent and inconclusive.



	10°	5°	0°	-5°	-10°	-15°	-20°
1	2.10	1.72	1.86	1.91	1.93	1.87	1.76
2	1.68	1.58	1.98	1.63	1.87	1.73	1.78
3	1.73	1.61	1.74	1.45	1.81	1.85	1.49
4	1.78	1.67	1.60	1.67	1.75	1.91	1.68
5	1.69	1.54	1.71	1.58	1.69	1.74	1.64
6	1.66	1.75	1.71	1.62	1.76	1.75	1.66
7	1.68	1.65	1.60	1.76	1.82	2.00	1.57
8	1.84	1.77	1.76	1.62	1.79	1.77	1.50
9	1.83	2.05	1.63	1.69	1.85	1.76	1.56
10	1.61	1.76	1.81	1.63	1.79	1.68	1.59
11	1.54	1.58	1.44	1.74	1.56	1.69	1.86
12	1.50	1.57	1.56	1.50	1.46	1.82	1.56
13	1.56	1.67	1.64	1.56	1.46	1.65	1.53
14	1.59	1.66	1.84	1.52	1.71	1.61	1.64
15	1.53	1.68	1.42	1.63	1.72	1.50	1.59
16	1.55	1.58	1.45	1.75	1.58	1.71	1.34
17	1.65	1.46	1.56	1.82	1.60	1.75	1.47
18	1.65	1.49	1.56	1.36	1.60	1.65	1.41
19	1.66	1.31	1.56	1.30	1.66	1.64	1.56
20	1.54	1.79	1.61	1.29	1.77	1.71	1.48
21	1.71	1.67	1.62	1.76	1.60	1.65	1.80
22	1.55	1.76	1.69	1.50	1.65	1.56	1.66
23	1.69	1.82	1.99	1.68	1.40	1.81	1.90
24	1.75	1.61	1.63	1.73	1.62	1.70	1.72
25	1.67	1.65	1.74	1.76	1.75	1.73	1.63
26	1.71	1.63	1.57	1.78	1.57	1.66	1.87
27	1.89	1.90	1.60	1.63	1.57	1.73	1.57
28	1.63	1.81	1.87	1.70	1.67	1.51	1.65
29	1.81	1.61	1.83	1.45	1.52	1.62	1.69
30	1.77	1.64	1.46	1.67	1.70	1.69	1.75
	1.69	1.67	1.67	1.62	1.67	1.72	1.63

In summary of the testing of the three Safariland retention mechanisms, a few interesting points emerged:

1. The numbers and trending for the ALS and ALS/SLS were remarkably similar.
2. While I did attempt to be bias free, I did have expectations of the negative angles being more efficient for the ALS, having experimented with the concept for a few months. What was not expected was the same trend for the ALS/SLS combo.
3. SLS/ALS, counter intuitively, proved to be faster than simple ALS for me in the positive angle realm. This could simply be as a result of carrying this holster combination for several years but does warrant further discussion. I have tended to think of the release of the SLS mechanism to be a separate movement which should add more time. A possible explanation is that defeating the SLS is not strictly a separate movement but rather one smooth motion conducted as a part of establishing a proper grip on the firearm. In fact, it is a somewhat explosive movement in comparison to the simple ALS draw which requires a self-imposed deceleration as the hand reaches the gun.
4. Even at the optimal  $-15^{\circ}$ , ALS was faster than ALS/SLS by only 0.05 seconds.
5. The all reps average of ALS only was 1.43s. The all reps average of SLS/ALS was 1.41s. Essentially the same. If this proves to be a consistent trend amongst all shooters (I have reiterated all along that this testing was a sample of just me), I see no reason for a LEO to NOT use the additional retention. Test it.
6. I acknowledge that there is an abundance of reports of shooters with smaller hands fumbling the SLS mechanism. I had no way to evaluate this.

### **BELT ANGLE**

The preceding data for all cant testing reported on angles determined when the belt loops of the holster were perfectly level.

In reality, the belt loops of a duty holster are almost universally tilted slightly forward at least  $5^{\circ}$ . The exact number likely depends on factors such as belt type, wearer build, etc. Outliers up to  $10^{\circ}$  have been noted.

What this means is that when we see that an optimal holster cant is  $-15^{\circ}$ , it is likely that it is theoretically  $-15^{\circ}$  in relation to the UBL but in actuality closer to  $-10^{\circ}$ .

So for example, the  $10^{\circ}$  forward cant on a stock RDS holster is actually  $15^{\circ}$ . The various methods for converting the holster to a straight ( $0^{\circ}$ ) drop will actually result in a forward  $5^{\circ}$  once placed on a belt.



The exception to this is with the legacy 6004 and newer 6004DFA drop leg options. These typically render a true level platform for the holster to be attached to and as such, will result in the holster being angle negatively 5° to 10° without aftermarket addition.



## **GLOSSARY**

ALS	Automatic locking system
RDS	Red dot sight
SLS	Self locking system
UBL	Universal belt loop
QLS	Quick locking system
6004	Legacy drop leg platform
6004DFA	Modernised drop leg platform using semi rigid belt attachment
6280	“Level 2” duty holster with only SLS retention
6360	“Level 3” duty holster with both SLS and ALS retention